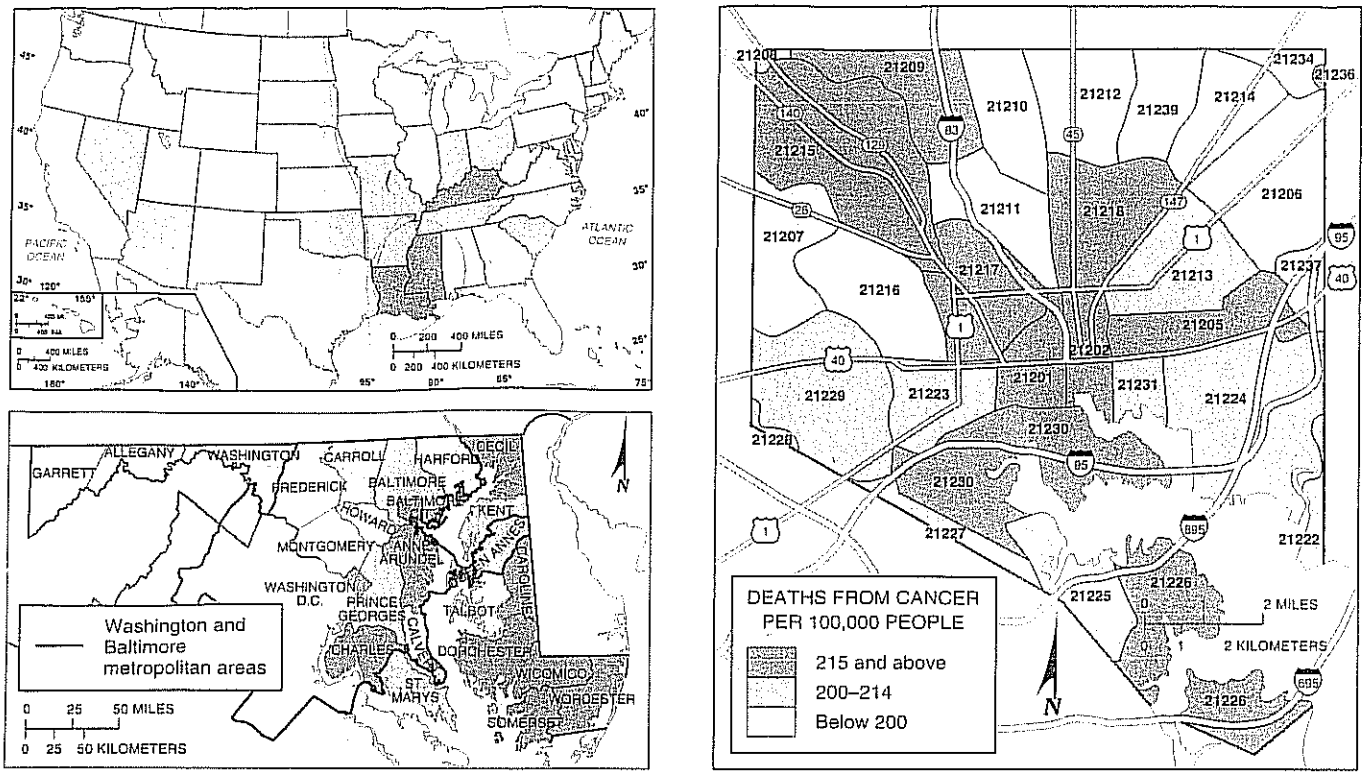

FIGURE 1–13 Spatial association at various scales. At the scale of the United States, eastern regions have higher cancer rates than western regions. At the scale of the state of Maryland, Baltimore City and eastern counties have higher cancer rates than western and suburban counties. At the scale of Baltimore City, southern neighborhoods have higher cancer rates than northern ones. Geographers try to understand the reason for these variations.

In everyday language we think of *culture* as the collection of novels, paintings, symphonies, and other works produced by talented individuals. A person with a taste for these intellectual outputs is said to be "cultured." Intellectually challenging culture is often distinguished from *popular* culture, such as television programs.

Culture also refers to small living organisms, such as those found under a microscope or in yogurt. *Agriculture* is a term for the growing of living material at a much larger scale than in a test tube.

The origin of the word *culture* is the Latin *cultus*, which means "to care for." Culture is a complex concept because "to care for" something has two very different meanings:

- To care *about*—to adore or worship something, as in the modern word *cult*.
- To take care *of*—to nurse or look after something, as in the modern word *cultivate*.

Geography looks at both of these facets of the concept of culture to see why each region in the world is unique.

When geographers think about culture, they may be referring to either one of the two main meanings of the concept. Some geographers study what people care about (their ideas, beliefs, values, and customs), whereas other geographers emphasize what people take care of (their ways of earning a living and obtaining food, clothing, and shelter).

WHAT PEOPLE CARE ABOUT. Geographers study why the customary ideas, beliefs, and values of a people produce a distinctive culture in a particular place. Especially important cultural values derive from a group's language, religion, and ethnicity. These three cultural traits are both an excellent way of identifying the location of a culture and the principal means by which cultural values become distributed around the world.

Language is a system of signs, sounds, gestures, and marks that have meanings understood within a cultural group. People communicate the cultural values they care about through language, and the words themselves tell something about where different cultural groups are located. The distribution of speakers of different languages and reasons for the distinctive distribution are discussed in Chapter 5.

Religion is an important cultural value because it is the principal system of attitudes, beliefs, and practices through which people worship in a formal, organized way. As discussed in Chapter 6, geographers look at the distribution of religious groups around the world and the different ways that the various groups interact with their environment.

Ethnicity encompasses a group's language, religion, and other cultural values, as well as its physical traits. A group possesses these cultural and physical characteristics as a product of its common traditions and heredity. As addressed in Chapter 7, geographers find that problems of conflict and inequality tend to occur in places where more than one ethnic group inhabits and seeks to organize the same territory.

WHAT PEOPLE TAKE CARE OF. The second element of culture of interest to geographers is production of material wealth—the food, clothing, and shelter that humans need in order to survive and thrive. All people consume food, wear clothing, build shelter, and create art, but different cultural groups obtain their wealth in different ways.

Geographers divide the world into regions that are more (or relatively) developed economically (abbreviated MDCs), and less developed (or developing) regions (abbreviated LDCs). MDC regions include North America, Europe, and Japan, and LDC regions include sub-Saharan Africa, the Middle East, East Asia, South Asia, Southeast Asia, and Latin America. Various shared characteristics—such as per capita income, literacy rates, televisions per capita, and hospital beds per capita—distinguish more developed regions from less developed regions. These differences are reviewed in Chapter 9.

Possession of wealth and material goods is higher in MDCs because of different types of economic activities than in LDCs. Most people in less developed countries are engaged in agriculture, whereas most people in more developed countries earn their living through manufacturing products or performing services in exchange for wages. This fundamental economic difference between more developed regions and less developed regions is discussed in more detail in Chapters 10 through 13.

Geographers are also interested in the political institutions that protect material artifacts, as well as cultural values. The world is organized into a collection of countries, or states, controlled by governments put in place through various representative and unrepresentative means. A major element of a group's cultural identity is its citizenship, the country or countries that it inhabits, pays taxes, votes, and otherwise participates in the administration of space.

As discussed in Chapter 8, cultural groups in the modern world are increasingly asserting their right to organize their own affairs at the local scale rather than submit to the control of other cultural groups. Political problems are found in places where the area occupied by a cultural group does not coincide with the boundaries of a country.

Cultural Ecology: Integrating Culture and Environment

In constructing regions, geographers consider environmental as well as cultural factors. Distinctive to geography is the importance given to relationships between culture and the natural environment. Different cultural groups modify the natural environment in distinctive ways to produce unique regions. The geographic study of human–environment relationships is known as **cultural ecology.**

Pioneering nineteenth-century German geographers Alexander von Humboldt (1769–1859) and Carl Ritter (1779–1859) urged human geographers to adopt the methods of scientific inquiry used by natural scientists. They argued that the scientific study of social and natural processes is fundamentally the same. Natural scientists have made more progress in formulating general laws than have social scientists, so an important goal of human geographers is to discover general laws.

According to Humboldt and Ritter, human geographers should apply laws from the natural sciences to understanding relationships between the physical environment and human actions. Humboldt and Ritter concentrated on how the physical environment *caused* social development, an approach called **environmental determinism.**

Other influential geographers adopted environmental determinism in the late nineteenth and early twentieth centuries. Friedrich Ratzel (1844–1904) and his American student, Ellen Churchill Semple (1863–1932), claimed that geography was the study of the influences of the natural environment on people. Another early American geographer, Ellsworth Huntington (1876–1947), argued that climate was a major determinant of civilization. For instance, according to Huntington, the temperate climate of maritime northwestern Europe produced greater human efficiency as measured by better health conditions, lower death rates, and higher standards of living.

HUMAN AND PHYSICAL FACTORS. To explain relationships between human activities and the physical environment in a region, modern geographers reject environmental determinism in favor of possibilism. According to **possibilism,** the physical environment may limit some human actions, but people have the ability to adjust to their environment. People can choose a course of action from many alternatives in the physical environment. Humans endow the physical environment with cultural values by regarding it as a collection of **resources,** which are substances that are useful to people, economically and technologically feasible to access, and socially acceptable to use.

For example, the climate of any location influences human activities, especially food production. From one generation to the next, people learn that different crops thrive in different climates—rice requires plentiful water, whereas wheat survives on limited moisture and actually grows poorly in very wet environments. On the other hand, wheat is more likely than rice to be grown successfully in colder climates. Thus, under possibilism, it is possible for people to choose the crops they grow and to be compatible with their environment.

Human geographers use this cultural ecology, or human–environment, approach to explain many global issues. For example, world population growth is a problem if the number of people exceeds the capacity of the physical environment to produce food. However, people can adjust to the capacity of the physical environment by controlling their numbers, adopting new technology, consuming different foods, migrating to new locations, and taking other actions.

Some human impacts on the environment are casual, and some are based on deep-seated cultural values. Why do we plant our front yards with grass, water it to make it grow, mow it to keep it from growing tall, and impose fines on those who fail to mow often enough? Why not let dandelions grow or pour concrete instead? Why does one group of people consume the fruit from deciduous trees and chop down the conifers for

building materials, whereas another group chops down the deciduous trees for furniture while preserving the conifers as religious symbols?

A people's level of wealth can also influence its attitude toward modifying the environment. A farmer who possesses a tractor may regard a hilly piece of land as an obstacle to avoid, whereas a poor farmer with a hoe may regard hilly land as the only opportunity to produce food for survival through hand cultivation.

Modern technology has altered the historic relationship between people and the environment. Humans now can modify a region's physical environment to a greater extent than in the past. For example, air-conditioning has increased the attractiveness of living in regions with warmer climates, and better insulation now permits living in regions with colder climates.

Geographers are concerned that people sometimes use modern technology to modify the environment insensitively. Human actions can deplete scarce environmental resources, destroy irreplaceable resources, and use resources inefficiently. The refrigerants in the air conditioners that have increased the comfort of residents of warmer climates have also increased the amount of chlorofluorocarbons in the atmosphere, damaging the ozone layer that protects living things from UV rays and contributing to global warming. We explore the consequences of such use, abuse, and misuse of the environment in more detail in Chapter 14.

PHYSICAL PROCESSES: CLIMATE. Human geographers need some familiarity with global environmental processes to understand the distribution of human activities, such as where people live and how they earn a living. Important physical processes include climate, vegetation, soil, and landforms.

Climate is the long-term average weather condition at a particular location. Geographers frequently classify climates according to a system developed by German climatologist Vladimir Köppen. The modified Köppen system divides the world into five main climate regions that are identified by the letters A through E, as well as by names:

- A Tropical Climates
- B Dry Climates
- C Warm Mid-Latitude Climates
- D Cold Mid-Latitude Climates
- E Polar Climates

The modified Köppen system divides the five main climate regions into several subtypes (Figure 1–14). For all but the B climate, the basis for the subdivision is the amount of

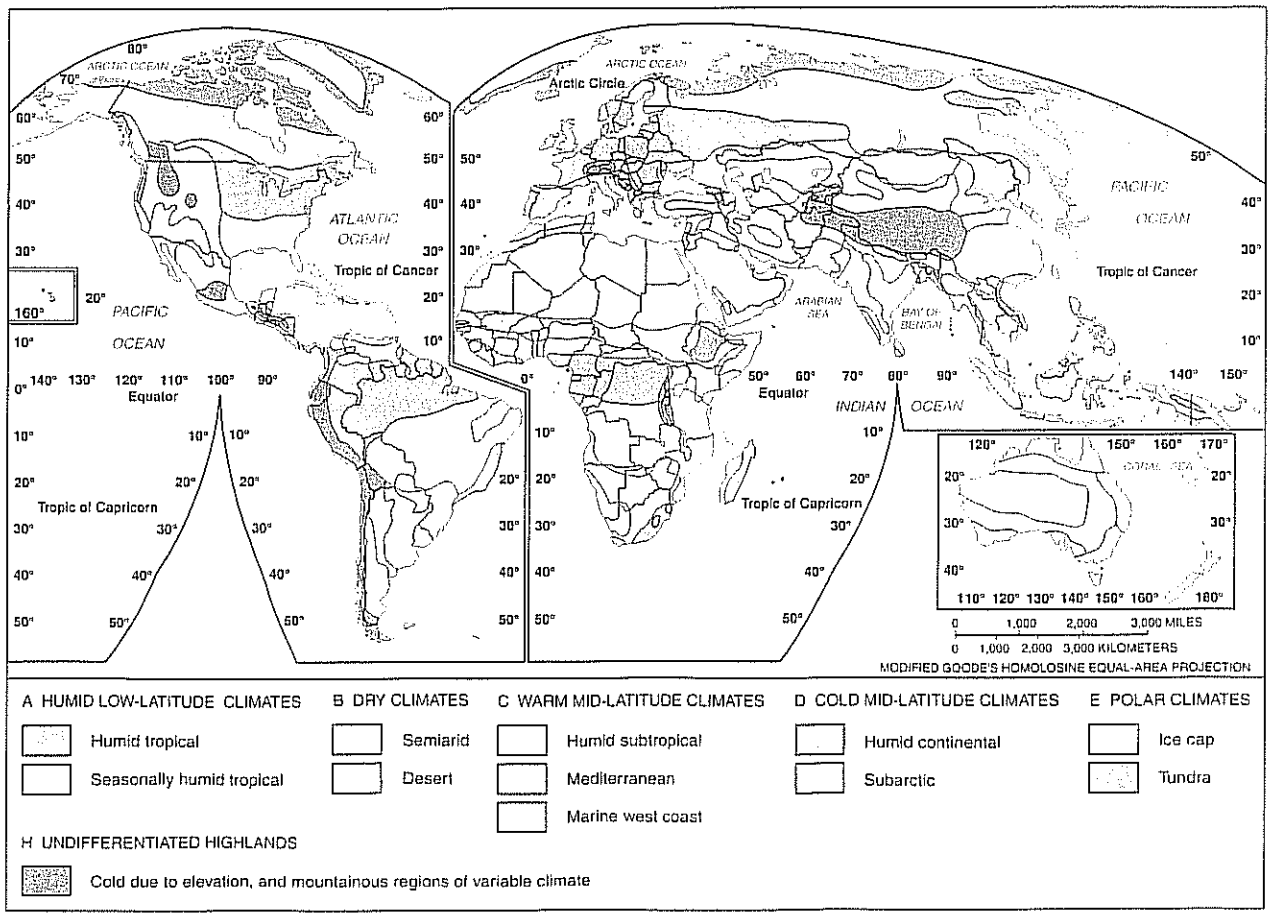

FIGURE 1–14 Climate regions. Geographers frequently classify global climates according to a system developed by Vladimir Köppen. The modified Köppen system divides the world into five main climate regions, represented by the letters A, B, C, D, and E.

precipitation and the season in which it falls. For the B climate, subdivision is made on the basis of temperature and precipitation.

Humans have a limited tolerance for extreme temperature and precipitation levels and thus avoid living in places that are too hot, too cold, too wet, or too dry. Compare the map of global climate to the distribution of population (see Figure 2–2). Relatively few people live in the Dry (B) and Polar (E) climate regions.

The climate of a particular location influences human activities, especially production of the food needed to survive. People in parts of the A climate region, especially southwestern India, Bangladesh, and the Myanmar (Burma) coast, anxiously await the annual monsoon rain, which is essential for successful agriculture and provides nearly 90 percent of India's water supply. For most of the year, the region receives dry, somewhat cool air from the northeast. In June, the wind direction suddenly shifts, bringing moist, warm southwesterly air, known as the *monsoon*, from the Indian Ocean. The monsoon rain lasts until September.

In years when the monsoon rain is delayed or fails to arrive—in recent decades, at least one-fourth of the time—agricultural output falls and famine threatens in the countries of South Asia, where nearly 20 percent of the world's people live. The monsoon rain is so important in India that the words for "year," "rain," and "rainy season" are identical in many local languages.

PHYSICAL PROCESSES: VEGETATION. Plant life covers nearly the entire land surface of Earth. Earth's land vegetation includes four major forms of plant communities, called biomes. Their location and extent are influenced by both climate and human activities. Vegetation and soil, in turn, influence the types of agriculture that people practice in a particular region. The four main biomes are forest, savanna, grassland, and desert.

In the *forest biome*, trees form a continuous canopy over the ground. Although trees are the dominant vegetation, grasses and shrubs may grow beneath the cover. The forest biome covers a large percentage of Earth's surface, including much of North America, Europe, and Asia, as well as tropical areas of South America, Africa, and Southeast Asia.

The *savanna biome* is a mixture of trees and grasses. The trees do not form a continuous canopy, and the resultant lack of shade allows grass to grow. Savanna covers large areas of Africa, South Asia, South America, and Australia.

As the name implies, the *grassland biome* is covered by grass rather than trees. Few trees grow in the region because of low precipitation. Early explorers from northern Europe and eastern North America regarded the American prairies—the world's most extensive grassland area—to be uninhabitable because of the lack of trees with which to build houses, barns, and fences. However, modern cultivation of wheat and other crops has turned the grasslands into a very productive region.

The *desert biome* is not completely bereft of vegetation. Although many desert areas have essentially no vegetation, the region contains dispersed patches of plants adapted to dry conditions. Vegetation is often sufficient for the survival of small numbers of animals.

PHYSICAL PROCESSES: SOIL. Soil, the material that forms on Earth's surface, is the thin interface between the air and the rocks. Not merely dirt, soil contains the nutrients necessary for successful growth of plants, including those useful to humans.

The U.S. Comprehensive Soil Classification System divides global soil types into ten *orders*, according to the characteristics of the immediate surface soil layers and the subsoil. The orders are subdivided into suborders, great groups, subgroups, families, and series. More than 12,000 soil types have been identified in the United States alone.

Human geographers are concerned with the destruction of the soil that results from a combination of natural processes and human actions. Two basic problems contribute to the destruction of soil—erosion and depletion of nutrients. Erosion occurs when the soil washes away in the rain or blows away in the wind. To reduce the erosion problem, farmers reduce the amount of plowing, plant crops whose roots help bind the soil, and avoid planting on steep slopes.

Nutrients are depleted when plants withdraw more nutrients than natural processes can replace. Each type of plant withdraws certain nutrients from the soil and restores others. Repeated harvesting of the same type of crop year after year can remove certain nutrients and reduce the soil's productivity.

To minimize the depletion problem, farmers in more developed countries sometimes plant crops that offer no economic return but restore nutrients to the soil and keep the land productive over a longer term. Farmers also restore nutrients to the soil by adding fertilizers, either natural or synthetic. Farmers in less developed countries may face greater problems with depletion of nutrients because they lack knowledge of proper soil management practices and funds to buy fertilizer.

PHYSICAL PROCESSES: LANDFORMS. Earth's surface features, or landforms, can vary from relatively flat to mountainous. Geographers find that the study of Earth's landforms—a science known as geomorphology—helps to explain the distribution of people and the choice of economic activities at different locations. People prefer living on flatter land, which generally is better suited for agriculture. Great concentrations of people and activities in hilly areas may require extensive effort to modify the landscape.

Topographic maps, published (for the United States) by the U.S. Geological Survey (USGS), show a remarkable detail of physical features, such as bodies of water, forests, mountains, valleys, and wetlands. They also show cultural features, such as buildings, roads, parks, farms, and dams. "Topos," as they are called, are used by engineers, hikers, hunters, people seeking a homesite, and anyone who really needs to see the lay of the land.

Geographers use topographic maps to study the relief and slope of localities. Relief is the difference in elevation between